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FRONT COVER

A Scene in Italy

An old Italian worker is explaining to the children that this wheat will soon be made into spaghetti for them to eat. The grain is part of the record 15-million-ton total exported last year from the United States in the battle for bread. (Signal Corps Photo.)

BACK COVER

World Population Map

The population of the world totals about 2.25 billion persons, and of the total land area, approximating 51 million square miles, only about 4 million are cultivated for the maintenance of the people.

Almost the entire population lives within a belt, about latitude 45° S. to 60° N., that extends around the earth. Outside this belt, the land is sparsely settled. Europe is densely populated between latitude 45° and 60° N., where climatic conditions are favorable. In North America and Asia, on the other hand, the climate in this latitudinal range is very cold, and the population is thinly distributed. Except in Java and the southern portion in India, all the densely populated areas are north of latitude 15° N.

About two-thirds of the world population occupies about one-tenth of the land surface. Over 52 percent is in Asia, 17 in Europe, 13.5 in the Western Hemisphere, 8.5 in the Soviet Union, about 7.7 in Africa, and only 0.5 percent in Oceania.

Various factors contribute to the uneven distribution of world population. Climate, probably the most important, is followed by soil fertility, physical relief, transportation, and cultural development of the people; all have a significant influence on population pattern.

CONSOLIDATION OF OFAR'S MONTHLY PUBLICATIONS

Beginning with this issue, *Foreign Agriculture*, somewhat expanded in size, will also include material of the type formerly published in *Agriculture in the Americas*, which will no longer appear, as such. Some features of both magazines have been retained in the new *Foreign Agriculture*, but in style and format it has been more nearly patterned after *Agriculture in the Americas*. We hope it will please readers of both. Subscribers to *Agriculture in the Americas* and to *Foreign Agriculture* will receive the combined publication until further notice.

FOREIGN AGRICULTURE HALLY H. CONRAD, EDITOR

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International Organization In World Food Crisis

In the more desperately pressed food-deficit countries, Governments may stand or fall upon the number of grams in the bread ration. Cabinet ministers talk of calories per capita, and every man in the street, of food. Food-surplus countries are making immense efforts to help others feed themselves. Such is the "food crisis."

by **DUNCAN WALL**

Little that is entirely new can be said on a subject so much discussed as food, and detailed current statistics, subject to revision as the situation changes, are not needed in this article. The purpose here is simply to draw together a summary picture of events leading up to the crisis, to list the efforts made to deal with the underlying problems, and to give a brief description of the international machinery set up to meet the situation.

The food problem has three interrelated aspects. First is the effort to stretch insufficient supplies through the 1947–48 year. Second is the intermediate problem of expanding food production at the first opportunity, the harvests of 1948–49. Finally, there is the long-term problem of organizing and improving the production and distribution of food so as to raise the diets of the world's people toward a secure health standard. In this last, technology, economic development, and measures to stabilize prices of farm products at levels fair to producers and consumers have emerged as the principal factors.

The International Emergency Food Council, now merged into the Council of the Food and Agriculture Organization, is the principal piece of international machinery in the immediate emergency. Its work also has some implications for the intermediate period.

The work of the Food and Agriculture Organization is important in connection with the total problem, with perhaps greater emphasis on the intermediate and long-term aspects. On the same aspects, the International Trade Organization now in process of creation, the International Bank for Reconstruction and Development, and the International Monetary Fund are expected to have a rather direct bearing. Other specialized agencies of the United Nations, under the general coordinating influence of the Economic and Social Council, will also be important.

In the intermediate phases, developments in such international-aid plans as have been proposed in the European Recovery Program seem likely at this time to assume the greatest importance.

The background of the picture is the world food situation before the recent war, together with the events leading up to the food emergency, which promises to continue, with diminishing urgency it is hoped, for another year or more.

Duncan Wall is Special Assistant to the Director, Office of Foreign Agricultural Relations, and Secretary, United States FAO Interagency Committee.

Background of Food Emergency

The world has about 2.25 billion people. Since 1936, population has been increasing at the rate of nearly 1 percent annually, which means approximately 20 million more people to feed each year.

FAO estimates indicate that in European countries 1,900 to 2,000 calories daily, and in eastern and tropical countries 1,500 to 1,600 calories daily, of actual food intake per person will be required for minimum "emergency subsistence" to prevent the most serious undernutrition and danger of civil unrest. For "temporary maintenance," which is still unsatisfactory but allows for better growth of children, improvement in general health, and increased work output, the intake figure for northern countries should be raised to 2,200 calories.

Because of uneven distribution and other factors, an actual intake of 1,900 to 2,000 calories daily requires that, as a national average, about 2,200 calories per day per capita be available at the retail level.

Estimates of FAO also indicate that before the war food supplies at the retail level were sufficient to furnish an average of less than 2,250 calories daily, per capita, in areas containing over half the world's people, 2,750 calories daily in areas containing a third of the world's people, and amounts between these high

and low levels in areas containing a sixth of the world's people.

Neither area averages nor measurement of food in caloric terms tells the whole story. There are sharp differences even in generally well-fed population groups, and a sufficiently high caloric diet may, especially under present circumstances, be made up of low-quality foods lacking in protein and protective elements. It is probably an understatement to say that half the world's people were insufficiently fed before the war.

By way of comparison, the United States in 1946 had a domestic food supply estimated to be capable of providing, at the retail level, an average of 3,400 calories per person daily.

In the group at the high-calorie level before the war were all North America, Oceania, the Soviet Union, three South American countries, and much of Europe. The area of the medium-calorie level included most of southern Europe, three countries in Asia, a part of the Middle East, and parts of South America and of Africa. This left in the low-calorie group most of Asia, part of the Middle East, and parts of Latin America and of Africa, according to FAO estimates.

In the late 1930's, just before the war, the United States and other food-exporting countries, notwithstanding a world food shortage in nutritional terms, were still struggling with problems of surplus farm commodities, unsalable at prices acceptable to producers without the aid of governmental income-supporting measures. International trade in important agricultural products had declined to a low level.

The outbreak of war quickly changed the situation. Market surpluses dwindled to relative scarcity. Acute food problems arose in several war-torn areas. Public attention was focused on food by apprehension of insufficient production and of widespread food shortage, together with realization that even in normal times millions were underfed.

Importing countries redoubled efforts toward greater self-sufficiency. Exporting countries strove for increased production and exports. National governmental controls on the production, collection, exports, imports, and utilization of food were instituted and tightened. Within the orbit of the Allied Powers, these national controls were used to implement a system of international distribution of foodstuffs and fertilizers through allocations.

While the world's total food production, measured in caloric value of farm output, increased after the war's outbreak, the relative gain did not exceed the estimated increase in the world's population, though significant variations in production took place among the several regions and countries.

In North America, farm production of food increased 30 percent from the prewar period to 1942–43 (average) and in South America, 17 percent. Increases were slight in southern and eastern Asia, Oceania, and South Africa. The over-all decline in western Europe, North Africa, and the Middle East was about 5 percent and in the war-torn parts of the

Photo by FAO

From this Special Meeting on Urgent Food Problems developed two lines of international attack on world food problems; one was the formation of the International Emergency Food Council and the other, the longer term World Food Proposals of the Food and Agriculture Organization.

Soviet Union, in occupied China, and in the Dutch East Indies was probably greater.

Although in North America animal products were emphasized in order to supply American overseas forces, the United Kingdom, and the Soviet Union, the changes in type of product during the war were, generally speaking, toward more food crops for direct human consumption.

Most of the major wartime changes in food production are considered to have occurred by 1943 and to have persisted through 1945. Such shifts in traditional patterns of production and trade and the destruction and disorganization left by war could not fail to create difficult postwar problems of readjustment in agriculture.

The needs for immediate food relief, and for rapid initial steps to restore food production in war-torn liberated areas, also were foreseen, and the United Nations Relief and Rehabilitation Administration was created November 9, 1943, with 48 member nations. Each contributed eventually a sum equal to 2 percent of national income for the year ending June 30, 1943.

UNRRA's work in Europe terminated June 30, 1947, and was tentatively scheduled to end in China as of December 31, 1947. Through September 1947, UNRRA's relief shipments totaled $2,857,867,000 in value, of which nearly half—$1,242,846,000—were shipments of food. All 17 "receiving countries" obtained food relief—Albania, Austria, Byelorussia, China, Czechoslovakia, Dodecanese Islands, Ethiopia, Finland, Greece, Hungary, Italy, Korea, Philippine Islands, Poland, Republic of San Marino, Ukraine, and Yugoslavia.

In addition, the United States and other powers supplied "wake of battle" food and other relief through their military forces and undertook feeding responsibility in occupied areas.

Expectations that UNRRA aid would tide over the immediate relief and food-production-restoration period, in retrospect, proved in error. Perhaps, in comparing the situation with that after World War I, too little allowance was made for the greater damage and disorganization left by World War II and for the greater dependence of farm crops and food distribution upon industrial goods and services.

Lack of fertilizers, fuel, machinery, draft power, transportation, and incentive goods; unstable currencies; continued political instability in many areas; and redistribution of land and extensive relocation of populations were all factors in slowing down the recovery of production and food distribution.

Finally, large parts of the world suffered unfavorable weather. This began with a Southern Hemisphere drought in 1944 and 1945. Europe had drought in 1945, winterkill in 1946–47, and drought again in 1947. The Far East's rice crops, too, were insufficient during these years, and that area had to seek substitute grains elsewhere.[1]

The caloric value of world food production in 1945–46 was about 5 percent less than in the prewar period, but, considering increased population, it was about 12 percent less per capita. For the 1946–47 season, world food production increased about 7 percent from the preceding year, but shortage of reserves left the supply situation little better. For 1947–48, food production is slightly greater again, but supplies for the deficit areas are expected to be less than in 1946–47. An aggravating factor in the situation has been the failure of production in the densely populated, critically deficit areas, necessitating large increases in exports from surplus-producing regions.

The long continuance of inadequate diets in both Europe and Asia has been reflected in lowered working power, increased disease, and retarded growth of children.

The Battle of Grain

The relative abundance of grains as compared with other foods, their low cost per calorie, ease of shipping and storage, and general dietary acceptance have meant that the fight against the food crisis has been largely a battle of grain. Thus the shortfall of available grain exports below requirements serves as a rough gage for measuring the magnitude of the food crisis.

Only about 2.25 million tons of rice are available this year for export from the areas of southeast Asia, which before the war exported about 8 million tons. Of this, about 6 million went to other Asiatic areas, and nearly 1.5 million tons to Europe, a part of which amount was used as livestock feed. Currently, no Asiatic rice is being shipped to Europe.

The world's import requirements of cereals (excluding rice) for food, as stated to the International Emergency Food Council, for 1946–47 were 37,351,000 long tons. Actual world exports fell short of this by 8,907,000 tons. Requirements for 1947–48, first placed at about 50 million tons for food and feed, were screened down to about 38 million tons, but export availability is not expected to exceed 28 or 29 million.

[1] The summary of the changing situation in this and the following paragraph is drawn from World Food Reports prepared by the Office of Foreign Agricultural Relations.

In fact, the surplus-exporting countries, as a whole, have not succeeded in increasing total grain exports in either of the past 2 years much over the prewar average. World grain exports averaged 28,387,800 long tons annually from 1933–34 to 1937–38. The figure was 28,526,000 tons in 1945–46 and 28,443,600 in 1946–47.

Significant changes have occurred, however, in the percentages of the total derived from each principal source. Of the "big four" exporters, the United States and Canada have each materially increased their exports and percentages of the total. In the past 2 years, both Argentina and Australia have been unable to reach their prewar averages or percentages of the total. The amounts coming from less important areas, such as the Danube Basin, North Africa, South Africa, and Indochina have, in total, declined from prewar averages.

In the prewar period, the United States averaged less than 5 percent (1,316,800 long tons) of the world's total grain exports; in 1945–46, over 40 percent (11,771,200 tons); and in 1946–47, over 52 percent (14,903,000 tons). If the export-availability figure of 28 or 29 million tons is met in 1947–48, in all likelihood the United States will again be called upon to furnish more than half of all the world's grain exports.

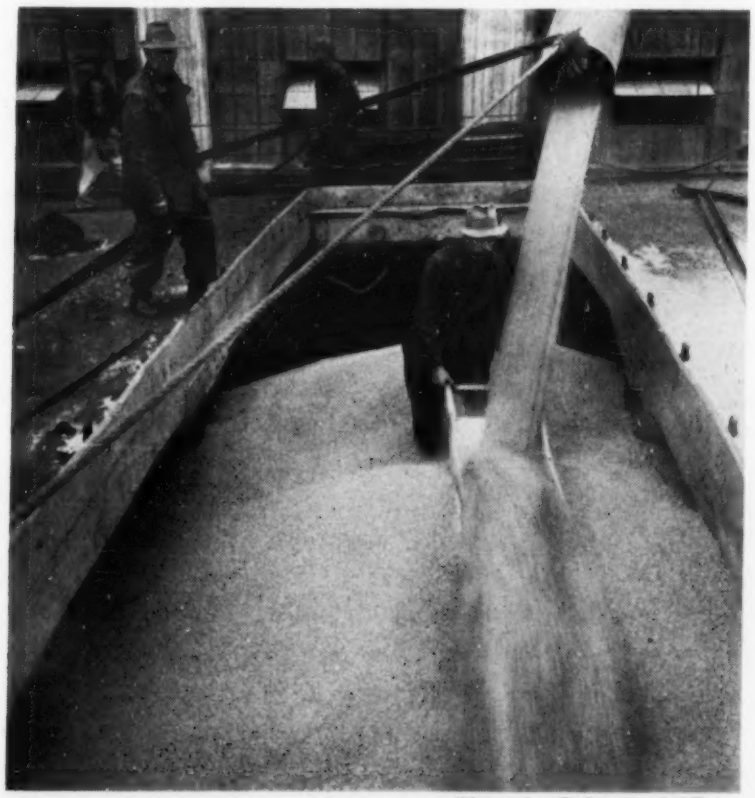

Photo by Osborne, USDA

Wheat is being loaded on a Great Lakes freighter to begin its trip to Europe, as part of the flood of grain which raised the United States share in world grain trade from 5 percent just before the war to more than 52 percent in 1946–47.

Considering small reserves, exports in 1947–48 must come chiefly from the 1947 world bread-grain (wheat and rye) crops that are only a little larger in total than in 1946 and still smaller than the 1935–39 average. The world crop of corn, principal coarse grain, is a little larger than in the prewar period but 12 percent smaller than in 1946.

Despite their importance, grains are not, of course, the whole story. Before the war, Europe's annual net imports of fats, oils, and oilseeds (as oil) amounted to 3.7 million short tons; at present only half this much is being received. Nor is Europe the whole story. In fact, the problem can be stated in terms of the change in Asia from net exports to net imports. Before the war (1935–39) Asia exported an aggregate of 6.3 million short tons of rice, sugar, peanuts, and soybeans and imported 1.6 million tons of wheat and coarse grain, making an aggregate annual net export of 4.7 million tons of these important principal products. Now, however, aggregate net imports of these same commodities total 6.4 million tons annually. In short, for the rest of the world, the apparent shortage in availability of these important foods, because of the changed situation in Asia, is about 11 million tons.

World Action To Solve Problems

Against the background set forth above must be cast an account of the steps taken by the world to meet the current emergency of food shortage, to expand food production rapidly, and to work toward a more secure food supply for all people at healthful levels and at stable prices fair to both producers and consumers.

These steps are best told in the chronology of development of the international organizations set up to attack the interrelated problems. The story begins with the wartime Combined Food Board. The Board, set up June 9, 1942, was composed of representatives of the United States, Canada, and the United Kingdom. Its work was to examine the stated requirements of the countries, and the export availabilities of the various important foodstuffs within the Allied Powers' orbit, and to recommend allocated distribution of the food supplies. This was carried on through a system of committees, one for each commodity under consideration. The recommendations, if acceptable to governments, were implemented by national wartime controls over supplies, exports, imports, and shipping. Countries other than those of the three Board members were represented on the commodity committees.

In 1943 (May 18 to June 3) representatives of 44 nations, on invitation of the President of the United States, held the United Nations Conference on Food and Agriculture, at Hot Springs, Virginia. Out of this grew the Food and Agriculture Organization of the United Nations, formally constituted at its first Conference, in Quebec, October 16 to November 1, 1945.

FAO was conceived as an organization to attack chiefly the longer term problems of food and agriculture, working for increased production and distribution of food and other farm, forestry, and fisheries products for the purpose of improving diets and increasing the welfare of rural people. Its membership is now 54 nations; its annual budget $5,000,000, and its temporary seat Washington. FAO can recommend, but not require, action on the part of member governments.

In the spring of 1946, however, the immediate food problems were most acute. UNRRA was about to pass out of existence. The need to continue international food allocations and to expand the representation in the Combined Food Board was recognized. Under these circumstances, the FAO convened a Special Meeting on Urgent Food Problems in Washington, May 20 to 27, 1946. This was attended by representatives of 22 nations and of a number of international organizations.

As a result of the meeting, the International Emergency Food Council was formed, with 34 member nations. It continued the work of the Combined Food Board, which was dissolved. The IEFC maintained the system of commodity committees, under the coordinating influence of a Central Committee made up of representatives of 9 governments. The secretariat for IEFC, including a Secretary General, and other expenses were financed by FAO. As of December 1, 1947, the following commodity committees were active: Cereals, fats and oils and protein feeds, rice, beans and peas, seeds, sugar, meat, fertilizer, cocoa.

The Special Meeting had also requested the Director General of FAO to draw up longer term plans for dealing with the world food situation in its future aspects of both scarcity and surplus. Pursuant to this, the Director General published his Proposals for a World Food Board in July 1946, and these were laid before the 1946 Copenhagen Conference of FAO.

In essence, the Director General proposed that, in addition to pressing forward technological advancement in agriculture and general economic development to increase production, trade, and buying power, a World Food Board should be created with power and internationally provided funds to buy surplus agricultural products and resell them to stabilize supplies and prices.[2]

Photo by UNRRA

The intermediate aspect of the world food problem is rapidly to restore production lost through war. This Greek family, for instance, needed a mule to replace the animal, seized by the Germans, which once turned this water wheel to irrigate their small farm.

The Copenhagen Conference accepted the objectives of the Proposals, stating them [3] as follows—

(1) developing and organizing production, distribution, and utilization of the basic foods to provide diets on a health standard for the peoples of all countries;
(2) stabilizing agricultural prices at levels fair to producers and consumers alike.

An expert Preparatory Commission of 17 nations was created to study the Director General's, and alternative, proposals for national and international action to achieve these objectives. The Commission met in Washington from October 28, 1946, to January 24, 1947.

The Commission's report [4] emphasized that the objectives could not be attained by efforts limited to agriculture but only in an atmosphere of an expanding world economy. This would require national efforts assisted by such international organizations as the proposed International Trade Organi-

[2] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. PROPOSALS FOR A WORLD FOOD BOARD. 12 pp. Washington. 1946.

[3] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. REPORT OF THE SECOND SESSION OF THE CONFERENCE. 70 pp. Washington. 1946.

[4] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. REPORT OF THE FAO PREPARATORY COMMISSION ON WORLD FOOD PROPOSALS. 84 pp. Washington. 1947.

zation, the International Bank, and the International Monetary Fund. In such efforts, FAO should accelerate its program of developing and spreading the application of agricultural and nutritional technology.

Photo by UNRRA

For the long pull to better food supply, the inefficient methods typified by the wooden plow must be replaced by better tools and methods.

The Commission also noted the expansion that had taken place almost universally in the scope and degree of unilateral national programs intervening in agricultural production, trade, and consumption. The Commission recommended that the various national policy-making officials should annually, at the FAO Conference, consult with each other as to the mutual effect of these programs and should seek to integrate them toward the FAO objectives.

For the special problems of instability of supplies and prices of agricultural primary commodities, the Commission recommended development of international commodity arrangements, applying in each case to a specific commodity situation in which widespread unemployment or burdensome surpluses had developed or were expected.

Such arrangements might deal with stocks, ranges of export prices, quota shares in the export market, and especially with measures to expand consumption, in such ways as to stabilize prices at fair levels. For at least certain food products, the arrangements might provide for special-price sales beyond export quotas in order to support emergency food programs or to help meet problems of chronic malnutrition in some populations until general economic development could remove the underlying causes of such malnutrition.

The Charter for an ITO, at that time being drafted in London, contained provisions for international commodity arrangements under these general conditions. The FAO Preparatory Commission recommended that the principles of the draft Charter as to these be adopted by the FAO member governments to serve as a guide in negotiating such international commodity arrangements.

The FAO and ITO preparatory groups joined in recommending to the Economic and Social Council of the United Nations that, until the ITO was in being, an Interim Coordinating Committee on International Commodity Arrangements be set up, with representation of both agricultural and nonagricultural primary commodities. A three-member committee was soon after appointed.

Finally, the Commission concluded that if FAO is to play its part in such measures it would need a more flexible policy-making body than the annual Conference. Consideration was therefore given to the formation of an executive body of 18 member governments, to be called the Council of the FAO. This body could meet at necessary intervals between Conference sessions to act for the Conference on policy matters in FAO's special field of interest.

The United States proposed an amendment to the FAO Constitution providing for such a Council, to replace the 15-man Executive Committee, made up of persons serving in their individual capacities as an advisory group to the Director General.

The Preparatory Commission's report became the chief business of the FAO Conference at Geneva, August 25 to September 11, 1947. The annual consultation on the world food situation and national agricultural programs which the Commission had recommended was held for the first time. The Constitutional amendment providing for the Council was adopted. The report of the Preparatory Commission was accepted in substance.

As to short-term problems, the Conference stressed the need to continue, for the present, international allocations of scarce foodstuffs and nitrogen fertilizers, made provision whereby the newly created Council might assume the work of IEFC, and recommended that this be incorporated into the Council in accordance with arrangements to be agreed upon.

In connection with intermediate food problems, the Conference recommended that governments take steps to increase production and export availability of fertilizers and farm machinery, particularly spare parts, and urged continuance of measures for the most

efficient collection, distribution, and utilization of foods.

Many of a considerable number of the Geneva Conference's recommendations as to activities of FAO's technical divisions bear upon the intermediate problem of achieving early increases in food production. FAO forestry experts are assisting in technical activities for increasing reconstruction timber supplies in Europe without unduly destructive cutting. Schools to bring European technical experts abreast of late developments, such as the production of hybrid-corn seed and artificial insemination, have been held. Technical service has been given in connection with the establishment of European refrigerating facilities for fish and other products.

Bearing upon longer term improvement and development of agricultural production and distribution, the Conference had endorsed the Report of the Preparatory Commission, calling for active encouragement of general economic development, and the idea of international commodity arrangements. The Preparatory Commission had considered that such arrangements might help to overcome farmers' fears of collapsed markets as a result of expanded production.

Also, the Director General was authorized to prepare plans for extension of FAO's technical and advisory work, through establishment of regional offices in Europe, Asia, the Near (including Middle) East, and Latin America. Such plans were to be made in the light of FAO's financial resources, in consultation with member governments, and in cooperation with other international organizations.

The Council of the FAO held its first session in Washington, November 4 to 11, 1947. The International Emergency Food Council had met during the preceding week and requested that the FAO Council prepare detailed plans for transferring and continuing the work of IEFC.

The Council of the FAO agreed to set up an International Emergency Food Committee of the Council, having the same functions and relationships to governments and to the commodity committees as the Central Committee of the IEFC had possessed. The Secretary General and secretariat of IEFC were to be continued without change, and definite financial provision for the work was made. A Committee on Integration was appointed to assist in dealing with administrative problems involved in the merging of IEFC's work into the Council.

Meeting again during the Council's session, the IEFC accepted these arrangements and increased to 11 members its Central Committee. The transfer was made effective as of formal acceptance by IEFC member governments.

In addition, the Council of FAO arranged for action to implement various other policy decisions of the Conference and created a Policy Committee on Production and Distribution. This Committee is to study and prepare for the Council's consideration recommendations on longer term policies for improving and developing agricultural production and distribution.

In concluding his remarks on the work of the United States Delegation to the Geneva FAO Conference, Under Secretary of Agriculture N. E. Dodd, the United States member of the Conference, stated:

> In spite of vexing particular problems, there is among the FAO member nations an awareness of the need for, and willingness to engage in, economic cooperation for the revival of production, trade and employment, and the achievement of more stable economic conditions. The Copenhagen objectives of better diets for all, and more fair and stable prices for producers and consumers of agricultural products, have real meaning for the FAO member nations as objectives of policy. . . .
>
> Progress to date gives confidence in the hope that the requisite patience, good will and earnest effort will be forthcoming, and that in FAO the world has an effective tool to bring about improved welfare for rural people, and better food and health for all people.

Reading about... Foreign Agriculture

Insect Pests of Food: The Control of Insects in Flour Mills, by J. A. Freeman and E. E. Turtle. 84 pp., illus. The British Ministry of Food, London, 1947. The main body of this practical discussion of the problems of controlling insect damage in flour mills is divided into three parts: Methods of Prevention and Control, Life Histories and Habits of Insects and Mites, and Infestation in the Mill. In addition, there is a general introduction setting forth the problem. At the end of the discussion are lists of plates and text figures, an index, and source references. In a foreword, the Director of Infestation Control, Ministry of Food, states that although the authors are well qualified and had ample access to valuable scientific data they chose to confine their "efforts to the production of a work of economic value to the practising flour miller and to the student of flour-milling practice."

Rural-Teacher Training In Guatemala

A cooperative program for rural improvement is under way in Guatemala. Not only are the schools to be improved, but teachers are being trained for service among rural people similar to that rendered by agricultural extension workers in the United States.

by **LLOYD H. HUGHES**

Guatemala, one of the most populous, and in some respects the most interesting, of the Central American countries, has recently become quite concerned about the educational facilities available to the overwhelmingly Indian population of its rural, largely agricultural, regions. The first step toward improving these facilities was the development by the Ministry of Education of a comprehensive plan for normal-school training.

This plan called for the construction and equipment of a series of normal schools in rural areas. One was to be located in each of the language and cultural regions into which the country is divided, and all were to be devoted to the task of training teachers. Such teachers are not only to teach rudimentary subjects but also to act as community leaders and to be channels of contact between the Indian villages and the educational authorities in Guatemala City.

The Guatemalan Government has been assisted in its plans and work for rural-school improvement by the Education Division of the Institute of Inter-American Affairs, an agency of the United States Government that operates under the supervision of the State Department.[1]

Cottage for teachers at Finca "La Alameda."

This cooperative program of rural-school improvement results from an agreement entered into by the Education Division and the Ministry of Education of Guatemala on August 12, 1944. In this agreement the Education Division agreed to make available a group of specialists from the United States, who would assist in the organization of the new rural-school system and in the development of a training program for teachers.

In addition, the Guatemalan Government agreed to establish a special section in its Ministry of Education to be known as the Servicio Cooperativo Interamericano de Educación (Cooperative Inter-American Service for Education), which was to provide the medium or mechanism through which the cooperative rural-education program would be carried out. This cooperative service, usually called the Servicio, was established in October 1945, and the special representative of the Education Division in Guatemala was appointed as its director. Each party to the agreement provides a specified portion of the funds and personnel of the Servicio, but none of the pooled funds are obligated or spent except with the prior approval in writing of the special representative for the Education Division, of the Servicio, and of the Minister of Education for Guatemala.

Problems Facing Rural School Teachers

Through the contemplated series of regional normal schools, the Guatemalan Ministry of Education hopes to train teachers who can functionalize rural education and help to solve some of the major problems of

[1] The special representative of the Education Division in Guatemala, and adviser to the Minister of Education on the new program, is Douglas S. Ward, formerly director of the American School in Quito, Ecuador, and principal of a high school in Des Moines, Iowa.

Games at the recess period of a rural school.

Indian communities. A majority of the Indians live in areas where economic development and education have been retarded and natural resources depleted. Unscientific practices are employed in agriculture, the use of stereotyped methods and techniques have caused the handicrafts to fall into decay, inadequate diet and sanitary facilities have resulted in the prevalence of various diseases, and a high degree of illiteracy prevails. These conditions need to be remedied and the living standards raised.

The community-centered school has been defined as one that operates as a full-time educational center for children and adults; that utilizes the resources of the community to invigorate the curriculum, which of necessity is based on an analysis of community structure, processes, and problems; that improves the community through participation in its activities; and that coordinates the entire educational effort of the community it serves.

Over-All Cooperative Program of Rural Education

Plans to develop rural schools to serve the rural Indian communities were worked out jointly by the Department of Rural Education of the Guatemalan Ministry of Education and the Education Division of the Institute of Inter-American Affairs at a series of conferences held in Guatemala City between August 1944 and October 1945. At these conferences it was agreed that the fundamental objective and end to be served by all phases of the cooperative education program should be the improvement of the rural school. It was agreed that the needs of the rural school, in all cases, were to determine the character of the training programs to be carried out in the normal schools.

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The life of students in both the normal schools and the community-centered rural schools was to approximate as nearly as possible the ideal life for ordinary folk of the community concerned.

Schoolhouses were to be simply but hygienically constructed and equipped and provided with the necessary land and buildings. At each rural school there was to be a workshop where the children would receive vocational training and where the men of the community could repair their tools and equipment. Similarly each rural school was also to have a home-economics laboratory, in which the girls were to be trained in homemaking, and which could be used by the women of the community. The hope is that by providing these services the adults will be helped in meeting their problems and at the same time will be given a continuing interest in the welfare of the school. All rural schools were to be coeducational and have teachers of both sexes.

At present, the rural schools are offering a 3-year elementary course, but it is planned eventually to extend this to 6 years. In the 3-year program currently being offered, the principal emphasis is on *castellanización* (teaching of Spanish), simple arithmetic, practical agriculture, and the care of small animals. When the second 3 years are added, instruction will be given in advanced agriculture, the care of larger animals, history, geography, civics, and advanced arithmetic.

Preparatory Workshop and First Normal School

Since this type of rural school was an innovation in Guatemala, teachers who were well-versed in its theory and methods were not available. An effort

Students working in school garden.

Slaughtering a hog at Finca "La Alameda."

has therefore been made under the cooperative program to meet this problem in two ways: (1) By selecting and giving special training to the first group assigned to the new-type schools, and (2) by organizing a permanent rural normal school dedicated to the training of teachers for the Cakchiquel region.

The more immediate job of training the first group of teachers for the rural schools of this region was handled by a workshop held at the Finca "La Alameda" in the Department of Chimaltenango from May 18 to June 29, 1946. Sixty-five teachers, selected through competitive examinations, attended the workshop. An attempt was made (1) to give them intensive training in the methods and subjects of rural schools; (2) to show them how to win the support of individuals and agencies in technical fields for the new rural-school programs; (3) to develop, through discussions and seminars, provisional course-of-study plans for use in rural schools; and (4) to prepare the most capable participants in the workshop for positions on the faculty of the new normal school or to receive scholarships that would cover the costs of training and maintenance.

Most of these objectives were realized, and, in addition, handbooks were prepared for the guidance and assistance of teachers of agriculture, physical education, hygiene, social studies, and arithmetic. They contained not only an outline of each specific course but also a great deal of social and economic data about the Cakchiquel communities.

Two weeks following the completion of the workshop, the first of the proposed regional normal schools was opened on July 15, 1946, in temporary quarters at La Alameda. The first students enrolled consisted of 35 honor graduates of the workshop course, who were awarded scholarships covering tuition and maintenance the first year of the 2-year training period.[2] Those students doing satisfactory work during the first year were to have their scholarship grants extended to cover the last year at the normal school.[3]

While the Guatemalan faculty of the normal school is being trained, the director of the Servicio

[2] The other 30 persons attending the workshop were appointed to staff experimental rural schools in the vicinity of La Alameda. These schools are trying out the program of studies developed at the workshop and are also serving as practice schools where cadet teachers observe and learn to instruct.

[3] Each scholarship student on being admitted to the normal school is required to sign a contract with the Ministry of Education and the Servicio, pledging himself to accept appointment in a rural school for a period equal to the number of years he was on scholarship.

is acting as director of the new normal school. The faculty is composed of the specialists who make up the Servicio staff, each of whom is assisted by one of the scholarship students. An assistant to the director was also selected from among the scholarship students to serve as administrator of the school.

Since agriculture is the principal rural occupation in Guatemala, an effort will be made to train teachers who have a knowledge of modern methods and techniques of farming and livestock raising. The use of improved tools and equipment and the importance of conserving natural resources also will be stressed.

Health education will receive much attention. Courses in that subject will be given, practice of good health habits by the students and the members of the community will be emphasized, and free medical aid will be provided for the students and the community by the school clinic.

Instruction in handicrafts will be directed toward improving techniques and designs, with the hope of increasing the market prices received by the workers for such products as pottery, basketry, cloth, silver work, and leather work.

The 2-year course of study, originally developed for the normal school, has been approved by the Consejo Técnico de Educación National (a national committee appointed by the Minister of Education to advise him concerning educational problems and programs) and is being used by the new school at the Finca "La Alameda." Off to an auspicious beginning, this regional normal school has already demonstrated its worth. Student teachers working at the practice school are testing the program of studies and are acquiring proficiency in modern methods, particularly in teaching agriculture.

The Cultural Mission Group

A most interesting feature of the work, which has just got under way, is the cultural mission service. It is a Guatemalan adaptation of the Mexican Cultural Mission's program, which was established to provide friendly supervision and contact between the normal school and its graduates; also, to help experienced teachers to improve their knowledge of subject matter and methods of teaching. The staff of the cultural mission service is composed of a director and supervisors for each of the phases of the school work.

The normal school serves as headquarters for the service, but the staff spends almost all its time in the field, helping teachers to solve their individual problems. Whenever a graduate of the normal school, or any rural teacher, comes face to face with a problem of method, content, or procedure that he cannot solve, he may request the assistance of the cultural mission. If the request is genuine and the problem of sufficient importance, the mission undertakes to solve it in collaboration with the teacher.

This service is a vital part of the program of the new normal school. It will not only serve to unify rural-education activities throughout the Cakchiquel region, but it will also introduce an effective method of school supervision, which has been much needed in Guatemala. Through this cultural mission group, the normal school will retain contact with its graduates, and the kind of supervision so much needed by young rural-school teachers will be made available.

Reading about... Foreign Agriculture

Tomorrow's Food: The Coming Revolution in Nutrition, by James Rorty and N. Philip Norman, M. D., with a foreword by Stuart Chase. 258 pp. Prentice-Hall, Inc., New York, N. Y., 1947. This book is divided into four parts entitled: "The Quest for Health—What's Wrong With American Food?—The Tools of Liberation—The Consumer's Job: Putting the Tools to Work." From them the reader learns that the native diet of remote Indian tribes may be more health giving than that of the average American. He may also be surprised and stirred by the life stories of men who have worked to give us better food. Finally, he may be cheered by the prospects for more and better foods to come.

The Royal Botanical Expedition to New Spain 1788–1820 (as described in documents in the Archiva General de la Nación [Mexico]), translated and collated by Harold William Rickett, Chron. Bot. 11 (1): 1–86, pl. 44–52. Chronica Botanica, Waltham, Mass., Stechert-Hafner, Inc., New York City, 1947. As the title indicates, this is an account of an expedition, sent by Charles III of Spain to survey the "natural productions" of Mexico (Nueva España) and to establish there a botanical garden. From papers of the national archives of Mexico, the translator "attempted to reconstruct the history of botany in that country from 1787 to 1820." Aside from its scientific value, our readers may be interested to know that "this the eleventh volume of Chronica Botanica is dedicated to the Director and Staff of the Library of the United States Department of Agriculture, etc."

Agricultural Collaboration With Foreign Countries

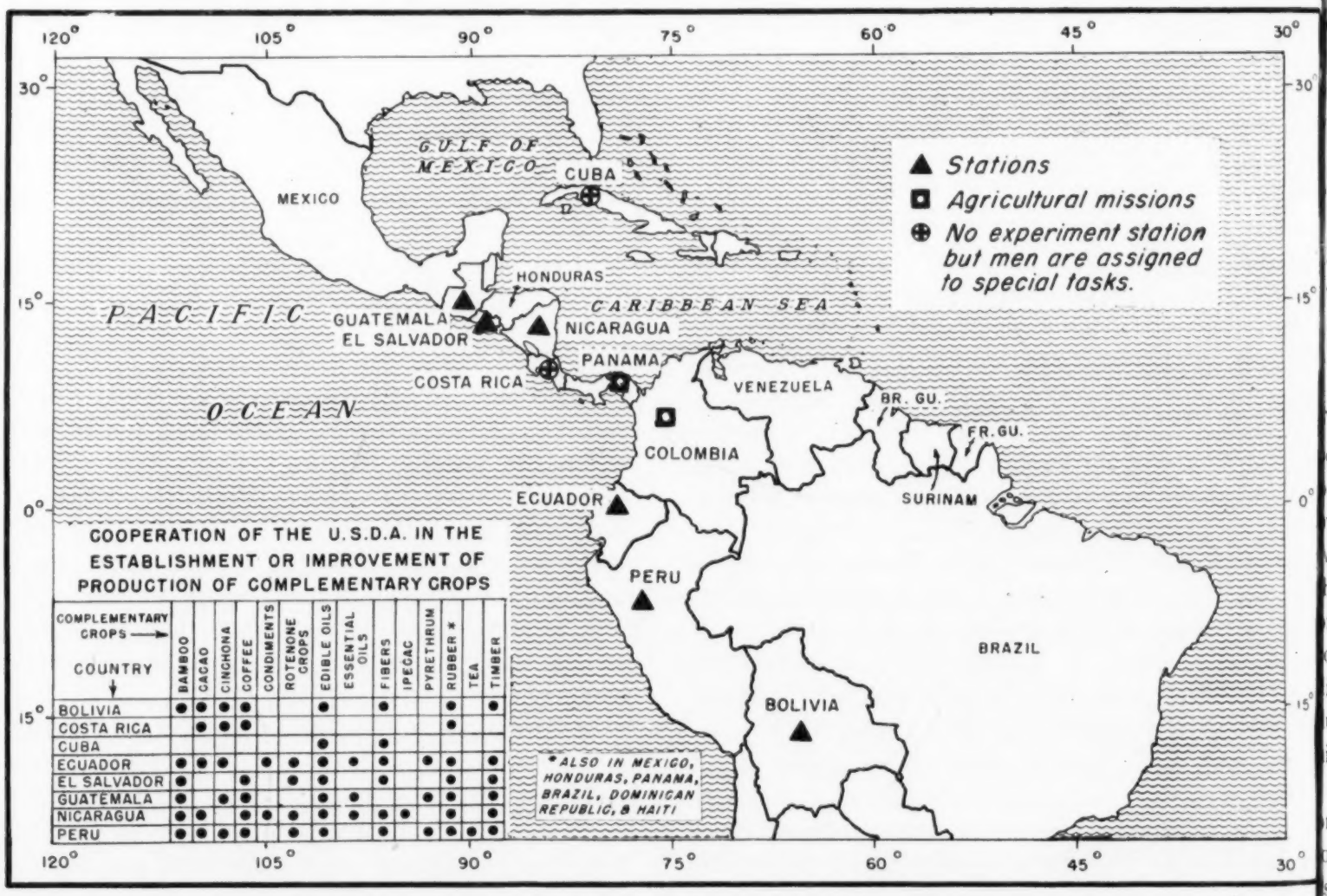
Technical collaboration in agriculture has proved to be a frictionless tool in international relations. The reason for the absence of friction is the working together, shoulder to shoulder, to advance mutual national interests.

by **JOHN V. HEPLER**

Agricultural cooperation by the United States with other countries is centered in the Technical Collaboration Branch of the Department of Agriculture's Office of Foreign Agricultural Relations. The program was originally authorized by the Congress in 1939 to "render closer and more effective the relationships between the American Republics," but it has been extended to countries outside the Americas through missions sent at the request of governments which, because of the ravages of war or other reasons need help in meeting various agricultural proble among their people.

Latin American Agricultural-Station Program

The program of agricultural cooperation as relate to the other American Republics is carried on large through the operation of cooperative agricultural tions and collaborative research and extension ects. While most of the work is administered by



Current activities in Latin American agricultural cooperation.

ffice of Foreign Agricultural Relations, the vast esources of the Department of Agriculture and of the ountry at large are tapped for suitable personnel and aterials. The cooperative work in rubber develop- ent, for instance, is administered by the Bureau of lant Industry, Soils, and Agricultural Engineering. ll the work is coordinated through the Interdepart- ental Committee on Scientific and Cultural Cooper- ion, Department of State, with cooperative projects rried on by other Government agencies.

Working agreements were made among the govern- ents concerned at various international conferences, ch as those held at Buenos Aires, 1936; Lima, 1938; d Rio de Janeiro, in 1942. When the establish- ent of a cooperative station is contemplated, a ission of agricultural technicians, representing both e foreign government and the United States, studies e region under consideration in order to determine e crop, or crops, to be grown and the locality most kely to give the best results. Then a long-term morandum of understanding is negotiated, which ies effective when approved by the U. S. epartment of State, the Secretary of Agriculture, nd corresponding authorities in the cooperating ountry. The memorandum sets forth the terms nder which the station will be established and speci- es the proportion of equipment, personnel, funds, and ther facilities to be supplied by each of the countries.

To date, cooperative agricultural stations, or rojects, have been established in eight countries; amely, Bolivia, Costa Rica, Cuba, Ecuador, El Sal- ador, Guatemala, Nicaragua, and Peru. Technical gricultural missions are now in Colombia and Pan- na. Some 300 research and demonstration projects ave been undertaken.

Stimulated by the realization, keenly felt when ar Eastern markets were paralyzed by Japanese ccupation, that the United States is heavily de- endent upon certain crops that complement its wn agricultural output, the program for the other mericas was initiated in order to find out where in e Western Hemisphere strategic and other tropical roducts, once largely imported from the Far East, ould be grown to advantage. Then efforts were irected toward developing nuclei or centers of pro- uction from which propagation material of the ighest possible quality could be secured.

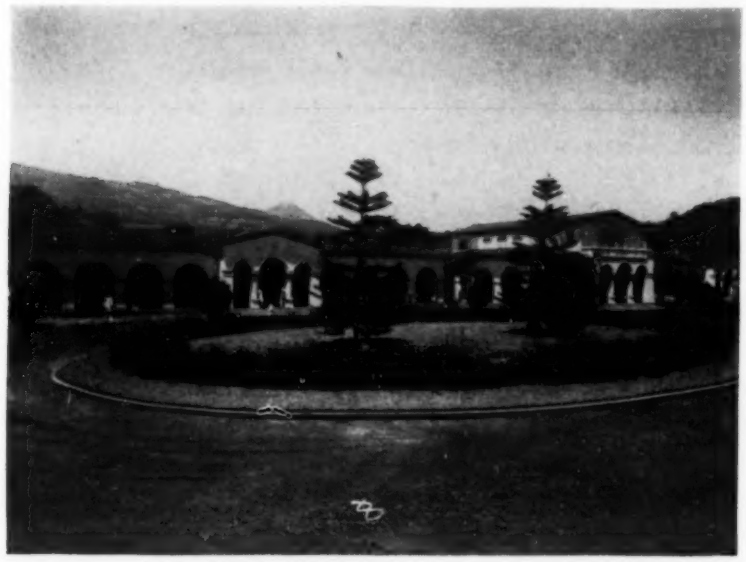
With sources of plant materials assured, the next roblem was that of obtaining skilled technical per- onnel to carry on. United States technicians were ssigned to the cooperative agricultural stations, and ssociate Latin American technicians were assigned to them by the collaborating government. This joint group of technical workers is developing the required techniques to produce, harvest, and process the important strategic tropical crops. North Americans are first assigned to the other Americas to survey and study existing conditions. Working with the technicians and agriculturists in those countries, they exchange experience and skills, and all strive together to solve the problems of the particular crop with which they are concerned. All contribute to the sum total of knowledge required for establishing it in the Western Hemisphere.

A typical cinchona planting, one of the many projects being conducted jointly by technicians of the United States and of a cooperating Latin American country.

As a result of the interchange of services and techniques, interest in the various crops that complement our own is being aroused throughout the other Americas. With the encouragement and assistance of United States technicians in producing the strategic and other tropical crops, our southern neighbors are realizing the potential value of the export market which awaits them in the United States. This is a challenge, which, fully developed, will furnish a means of economic improvement in the producing countries. Dollar credit can be built up with which to purchase articles manufactured here, and favorable trade relations will thus be fostered to the benefit of all.

In areas where strategic and other tropical crops are being established, every effort is made to encourage improvement in health and sanitary conditions. With better nutrition and health, the native people become stronger and able to work more. As standards of living advance, better relationships

are facilitated between the producing country and the United States. The character of the work varies, of course, from country to country and locality to locality, depending upon the crop grown and local conditions. Wherever work is initiated, the social sciences contribute in the development of the region served by the agricultural station.



Main office and laboratory building of the cooperative agricultural experiment station, Centro National de Agronomía, at Santa Tecla, El Salvador.

On the other hand, by developing the production of complementary and strategic crops in this hemisphere, the United States is building up living stock piles of materials needed for industry and for emergency use. This should reduce the necessity for huge reserve supplies, and the losses of materials that deteriorate under storage conditions will be avoided.

Due largely to the influence of United States technicians and programs, the other Americas are ordering large numbers of livestock from the United States. Some of these are for improving native breeds; others are used to build up herds. Demand has also grown for all kinds of agricultural machinery for use on Latin American farms. Likewise, interest has grown in obtaining United States technical equipment for laboratories and offices.

Selections of disease-resistant plants, representing various important crops found or developed in tropical America, are being sent to the United States. These may be cultivated here, particularly in the Southern States, or they may be used for plant breeding or for improving crops already produced in this country.

In addition to the growing of strategic and other tropical crops and disease-resistant plants, the other American countries are being encouraged to produce materials that are needed by the United States in various lines of manufacturing, and which are in scarce supply. These include such products as fibers, insecticides, drugs, condiments, and the like. An increase in the commercial production of any one of such crops, or others, tends to raise the purchasing power of the cooperating country and strengthen its economy.

Cooperative-Training Grants

A total of 152 "in-service trainees" from 18 of the other American Republics were sent to the United States under cooperative-training grants during the 3 fiscal years 1944–47. These grants were for a year of specialized, on-the-job training in agricultural sciences and practices. This training was provided by and through the cooperating agencies of the Department of Agriculture. The fields of study included soil science and conservation, plant science, veterinary science, silviculture, agricultural administration, agricultural economics and statistics, farm cooperatives, and agricultural-extension work.

Of the 152 trainees who came under grants provided during the 3 years mentioned above, 68 came in 1946–47. During this same year, 158 visiting agricultural scientists, officials, industrialists, etc., from 18 of the American Republics were received and assisted in their study-visits by agencies of the Department. The average length of stay in this country exceeded 2 months and ranged from a few days to more than a year.

In addition to the trainees from the other Americas, agencies of the Department provided similar services during 1946–47 to 799 persons from other countries of the world.

Exchange of Leaders

A formal program of exchange of leaders, professors, and specialists was undertaken with the other American Republics under Public Law 355 of August 1939. This was initiated by the Department of State in July 1940. Under this program, the visitors are usually high government officials, outstanding professors in universities, or eminent research workers. Invitation is extended to the individual, at the suggestion of this Government or on the initiative of the home government of the recipient, to visit, consult, and lecture in the host country in his field of specialization.

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Persons coming to the United States upon such invitation are official visitors of this country and are accorded the diplomatic courtesies extended to foreign guests of high rank. Those who work in the field of agriculture are referred to this Department, where the Office of Foreign Agricultural Relations facilitates their consultation with technicians and administrators of the Department and arranges trips to the State Land Grant Colleges and field experimental stations, where they interview the leading men in their respective fields. Corresponding privileges and opportunities are courteously and effectively made available in the other Americas to leaders, professors, and specialists from the United States.

In the three fiscal years 1944–47, under this exchange program, four agriculturists from the United States have participated in this arrangement. From the other Americas, two agriculturists came to the United States during 1944, eight in 1945, two in 1946, and, so far, four in 1947. The length of stay for each person is usually about 3 months. The travel grant usually covers the expense of coming and going and travel within the country visited.

Agricultural Missions To Foreign Countries

Another type of cooperation between foreign countries and the United States is provided by Public Law No. 63 of May 1939. This law makes possible the assignment of technicians to cooperating countries under an agreement whereby the salary and expenses of technicians are shared by both governments in the proportion agreed upon.

Technicians or administrators assigned under Public Law No. 63 are highly qualified in their specialty. Such assignments are made when a special study is to be made, or when technicians are to serve temporarily as advisers to foreign governments or to assist in setting up specific agricultural programs. The law provides that such assignments shall not exceed one year, but they may be extended if the work requires a longer period. Such missions are now operating, as stated before, in Colombia and Panama.

Colombia has repeatedly requested and received advice and counsel from the United States Government in formulating its agricultural programs and public services in agriculture. The agricultural mission now in that country was headed by Dean E. C. Johnson, of the State College of Washington, who worked closely with the Colombian National Director of Agriculture. The United States Government has also assigned four specialists, who are currently serving in the following capacities: (1) Extension specialist, assisting in the reorganization and development of the agricultural extension service; (2) extension animal husbandman, giving instruction in the national agricultural faculty and to farmer groups; (3) agricultural engineer, advising with national officials and farmers regarding problems in warehousing, grain storage and fumigation, refrigeration, farm structures, and the whole field of agricultural engineering; and (4) irrigation specialist, who is giving advice regarding water problems and assisting in the development of irrigation and drainage projects.

Since 1940, 9 other Latin American countries—Mexico, Nicaragua, Ecuador, Peru, Bolivia, Haiti, Venezuela, Brazil, and Paraguay—have requested and obtained the assistance of technical mission groups, or individuals. These have served as consultants to the Governments to formulate sound programs of agricultural development.

A number of other missions have completed assignments, such as those carried out in China, the Philippines, Syria, Lebanon, Iraq, Saudi Arabia, Egypt, and Greece. These missions were sent at the request of the respective Governments for the assistance of experts in specific technical phases of agriculture and were cooperative in nature. The foreign countries selected and assigned their own technical experts to determine the potentiality of technical collaboration in agriculture between the two governments.

The United States members of the China, Philippine, and Near East Missions, upon their return to this country, prepared reports covering the work of the respective missions. These reports have been published by the Office of Foreign Agricultural Relations, U. S. Department of Agriculture.

Some of the United States members of these joint missions were recruited from the United States Department of Agriculture, but the majority came from Land Grant Colleges and from commercial sources. The heads of the United States sections of these missions were such distinguished leaders in agricultural thought in the United States as Dr. Claude Burton Hutchison, Dean of the College of Agriculture and Vice President of the University of California, to China; Dr. F. S. Harris, President, Utah State Agricultural College, and Dr. R. E. Buchanan, Director, Agricultural Experiment Station, Iowa State College of Agriculture, to the Middle East countries; and Dr. Leland E. Call, Dean of Agriculture and Director of the Agricultural Experiment Station, Kansas State College, to the Philippine Islands.

Jaboticaba—"Grape of Brazil"

In Brazil grows a beautiful and unusual tree. If a young maiden picks the deep-purple grapelike fruit from its trunk, sucks the honey-sweet pulp, and throws the seed and skin on the ground under the tree, she will be married within the year, according to local tradition

by **HENRY W. SPIELMAN**

The jaboticaba tree of Brazil is outstanding in a number of ways. First of all, it is strikingly beautiful in appearance. Branching into a symmetrical domelike shape, with dense light-green foliage, it reaches a height of from 12 to 30 feet. Around many farm homes in the older agricultural sections of central Brazil, the tree serves as an ornamental to beautify the landscape. Around Rio de Janeiro, it is a feature of gardens and orchards. Sometimes it grows alone, but small orchards of an acre or more, are not unusual.

Close-up view of a jaboticaba tree showing fruit habit.

When in bearing, the tree attracts even more attention than by its beauty alone. The grapelike fruit grows on the trunk, from exposed roots to major branches and on even to the ends of the twigs. When heavily fruited, it is a curious sight. A visitor is apt to think that giant beetles are attached to the bark! Upon closer inspection, he finds that the dark glistening objects are spherical fruits from 0.5 to 1.5 inches in diameter. The skins are somewhat tougher and thicker than those of grapes, but the sweet pinkish-white pulp has a pleasing vinous taste quite similar to that of table grapes in the United States. Each fruit contains from one to four oval, slightly flat seed.

When a farm family has a visitor during July, August, or September, a common custom in the evening is to sit around the dinner table with a large bowl of jaboticabas in the center and a small bowl in front of each person. Each helps himself from the center bowl and disposes of the skins and seed in his small bowl. As the fruit is consumed, the ice is pleasantly broken for the newcomer; he soon finds himself, as well as the others, talking freely, and at the end realizes that he has had a delightful evening.

In addition to being used as fresh fruit, jaboticabas also make excellent jelly and delicious wine and cordials. Unfortunately, the fruit does not keep well in the fresh state but must be eaten, or utilized in other ways, within 2 days after it is picked. In fact, most connoisseurs would eat it only on the day picked. Though large quantities are found in the city markets of southern Brazil, the fruit is too perishable for export.

The name jaboticaba is said to be of Tupi origin, derived from *jabotim*, which signifies "like turtle fat."

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Jaboticaba tree near Rio de Janeiro, Brazil.

It was probably suggested by the jellylike pulp of the fruit. The scientific name most commonly used is *Myrciaria cauliflora* Berg, but several species have been distinguished, all of which are generally called jaboticabas.

Areas of Production and Growing Conditions

In the wild state, the jaboticaba tree is found only in southern Brazil, from Minas Gerais south to the Uruguayan border. It is also cultivated in this same area and in a few other parts of the country. Introduced into the United States, as well as into several other countries, the tree has done fairly well in southern Florida, but apparently the climate of southern California is too cool for best results. The tree, however, does stand an occasional freeze and short periods of dry weather. The freezes of 1942 and 1943 in São Paulo retarded growth of the trees but only slightly reduced the total production of fruit in those years. The freezes were not of long duration, however.

The jaboticaba grows well on all types of well-drained soil in southern Brazil but does best on deep rich loam or clay-loam soils. It grows slowly, requiring from 6 to 8 years to come into production. The small white flowers grow singly or in clusters on the trunk and limbs. Sometimes they are so thick that the surface of the tree can scarcely be seen. They are like myrtle flowers in form, with four small petals and a prominent cluster of stamens. The flowering, as well as bearing, season varies according to species and location; when the trees are cultivated and well watered, they may flower and bear fruit several times during the year. The fruit develops rapidly and ripens within 2 or 3 months after the time of flowering.

Jaboticabas are said to be eaten in Brazil with more relish than table grapes are in the United States. Some varieties are less pleasing in flavor than others, but in general "a good jaboticaba is so thoroughly agreeable as to tempt one to keep on picking and eating the fruits indefinitely—a temptation to which, it must be confessed, Brazilians often yield." [1] A city is even named for the fruit, or the tree. Jaboticabal, reported to have been founded by the settlers of the State of São Paulo in a grove of jaboticabas, now thrives as an important cotton, coffee, and vegetable center.

[1] POPENOE, WILSON. THE JABOTICABA. Jour. Hered. 5: 318–326, illus. 1914.

The Bread-Grain Picture in Europe

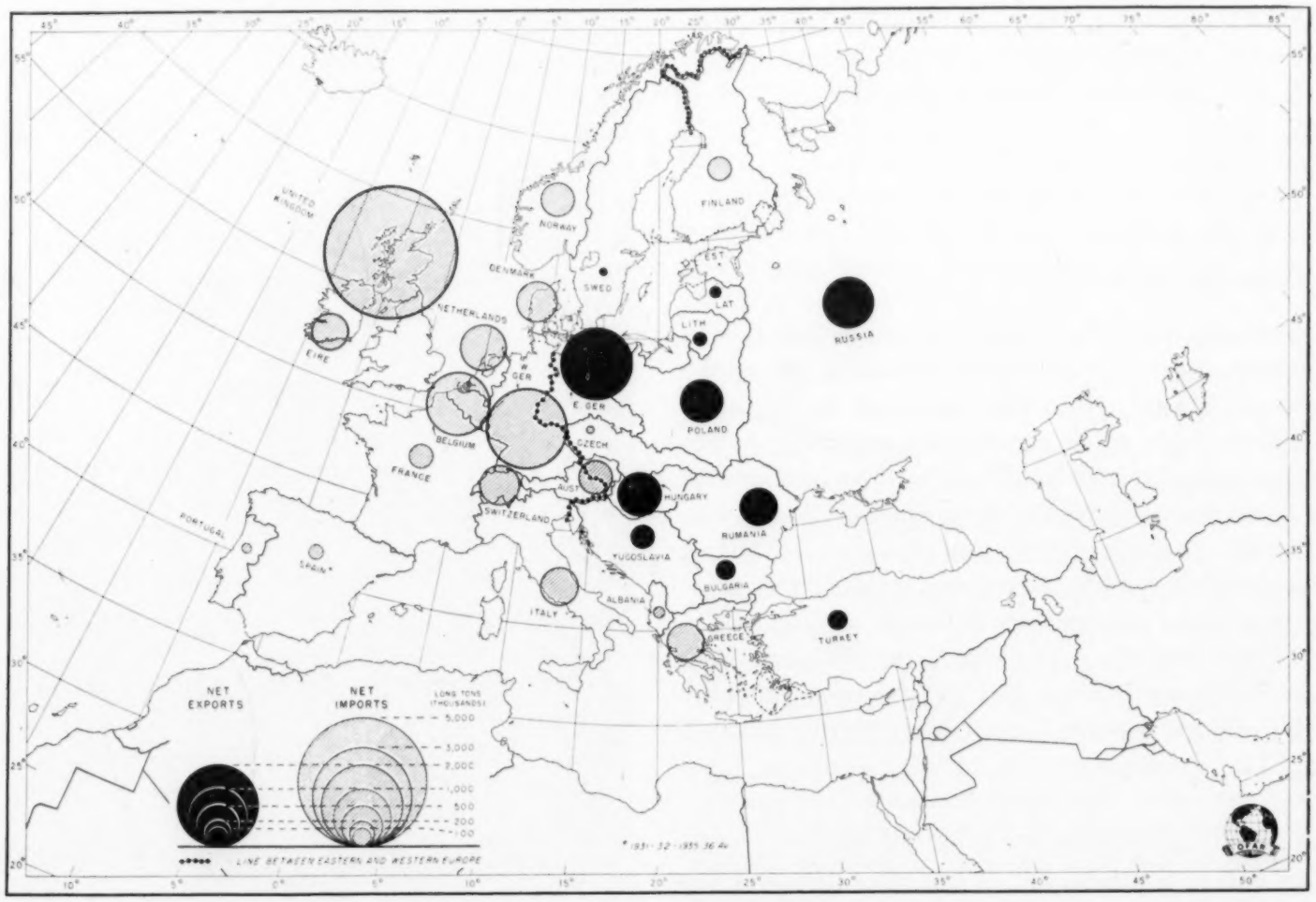
by **LEO J. SCHABEN**

Overshadowing all the problems of postwar rehabilitation in Europe is the fact that millions of men, women, and children are hungry—too hungry to work effectively—and suffering from diseases that ravish the undernourished. Grain harvests in virtually all the grain-importing countries during 1947 were substantially below those of 1946. For Europe as a whole, exclusive of the Soviet Union and the Danube Basin countries, the 1947–48 season must be another year of dependence mainly on imports from the Western Hemisphere countries.

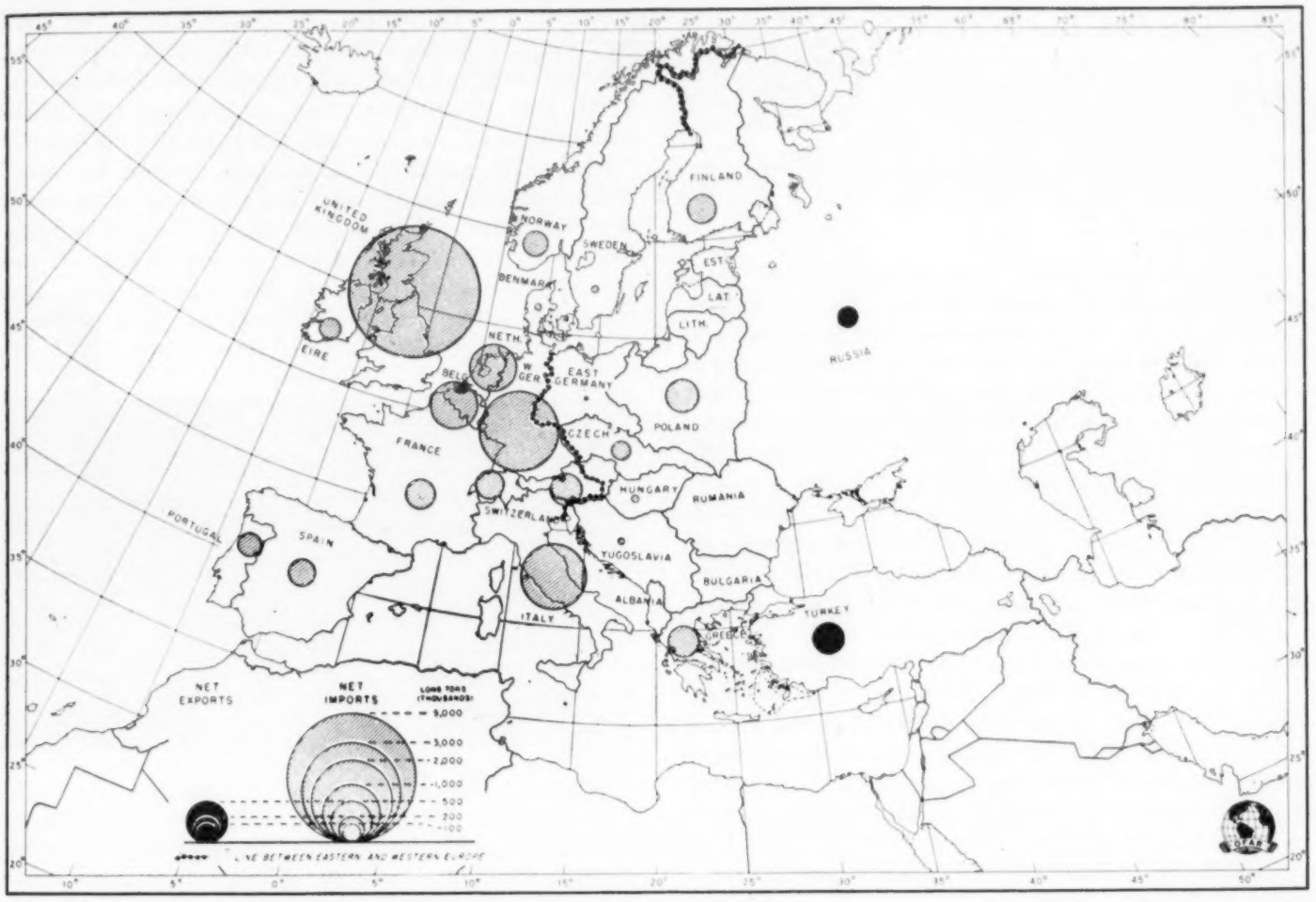
The freezes of last winter, followed by generally unfavorable weather in the spring, damaged much of Europe's winter grains and spring crops. This was especially true of crops in the United Kingdom, Belgium, Denmark, northern France, and parts of Scandinavia and central Europe where reseeding of much of the land to grains was limited. A summer drought over a large part of western and central Europe and some parts of the Danube Basin subsequently reduced late crops, not only grain but potatoes, sugar beets, pasture, and other crops as well.

Other factors contributing to this year's critical food situation in Europe are failure of grain production in many countries to recover as rapidly as had been anticipated, in part because of fertilizer, machinery, and manpower shortages; the postwar dislocation of production resulting from far-reaching social, political, and economic changes; the inadequacy of internal transportation and marketing facilities in a number of countries; the increased demand for grains to compensate for shortages of other foods, especially fats and oils, meats, and sugar; population increases arising from natural causes or political migrations; and a lack of sufficient foreign exchange and ocean shipping to finance and move expeditiously such quantities of grain as are available in the surplus-producing areas of the world.

The change which has taken place since the prewar period in the net-import and net-export status



Map I.—Net exports and net imports of bread grains—wheat and rye—of European countries, average 1933–34 to 1937–38.



Map II.—Net exports and net imports of bread grains—wheat and rye—of European countries for the year 1946–47.

of European countries with respect to bread grains (wheat and rye as grain and flour) is well illustrated in the accompanying maps. It will be noted that before the war all the European countries producing a surplus of bread grains, that is, grain for export, were found east of the line dividing eastern from western Europe. Virtually all the exports from eastern Europe went to countries of western Europe, which, in addition, imported large quantities from the Western Hemisphere.

In 1946–47, however, some of the eastern European countries had no bread-grain exports at all, and exports from others were greatly reduced. A similar situation is likely to prevail during the current season, although some improvement over last year is expected.

During the 1946–47 season, when the world's total exports of all grains amounted to 28,444,000 long tons (20.6 million tons of bread and 7.8 million of coarse grains), European countries received 18,500,000 tons (about 13.6 million of bread and 4.9 million of coarse grains). That year 96 percent of the bread grains and 95 percent of the coarse grains imported into Europe came from the United States, Canada, Argentina, and Australia. As indicated by map II, such countries as those of the Danube Basin had relatively little grain, or none at all, to export during 1946–47. In fact, such former net exporting countries as Hungary, Rumania, and Yugoslavia appear as net importers of grain in that year, and exports from Russia were substantially below the prewar average.

While map II indicates that the 1946–47 bread-grain imports of most European countries were substantially below the prewar average, that reduction was offset to some extent by the greatly increased imports of coarse grain (corn, oats, and barley). The total of 4.9 million long tons of coarse grain imported by Europe that year, most of which was earmarked for human food, was more than double the 2.1 million tons of such grain imported in the 1945–46 season. Practically all the imported coarse grain came from the United States and Argentina. Virtually no coarse grain was exported from the former surplus-producing areas of the Danube Basin that year, and only relatively small amounts are expected to come from that area this year.

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INTERNATIONAL *Agricultural News*

Field Day Held in San Salvador

The second annual Field Day of the Centro Nacional de Agronomía of El Salvador was held under the direction of Dr. N. E. Winters and his staff on September 26, 1947. The 800 people in attendance represented all sections of the country as farmers, businessmen, governmental officials, and representatives of other governments, including Ambassador Albert F. Nufer of the United States Embassy.

The program for the day consisted of a scheduled tour of the experimental work being conducted at San Andrés on fiber, oil, insecticides, food crops, grasses, legumes, soil conservation, fertilizers, green manuring, and crop rotations. The entire group then visited the experimental work on coffee being carried on at Santa Tecla, where the laboratories and offices of the cooperative-agricultural-station program are located. The visitors were shown the laboratories, motion pictures, and picture slides of the work of the station, and each phase of the program was discussed with them.

One prominent visitor said in a subsequent letter to Director Winters that he was particularly impressed by the initiative and activity shown in the station work and by the significance of the experimental work in relation to its practical application to the farms of El Salvador. The Acting Minister of Agriculture in his public address to the visitors indicated that the event was of tremendous importance to the agriculture of El Salvador.

New Appointment at Tinga María

George Allan Woolley will arrive in Tingo María, Peru, early in January to work with the Peruvian extension personnel in building an effective extension program in conjunction with the Estación Central de Colonización.

Mr. Woolley has been employed for the past 20 years as an extension agent in the State of Montana, carrying to the farmer the best known practices in agriculture and homemaking. Previous to his employment as an extension agent, he worked as a field man for one of the sugar companies in Montana. In both jobs he came in close contact with Spanish American farmers so that he learned to know and appreciate them and to understand their problems. Tingo María is indeed fortunate to have a man of such broad experience and outlook to help establish the extension program there on a sound basis.

V. D. Bailey Goes To San Salvador

V. D. Bailey arrived in San Salvador on November 20 to help develop an extension program at the collaborative agricultural station, Centro Nacional de Agronomía, in El Salvador. His work will be a challenging and stimulating experience because of the need and opportunity for extending the results of research work to the rural areas of the country.

Mr. Bailey is from Colorado, where he has been teaching vocational agriculture and serving as an extension agent. The people of the county in which he did most of his work, Conejos, are about 70 percent Spanish American. Thus Mr. Bailey has, through his work, learned to understand and appreciate a culture similar to that of El Salvador.

THE CACAO BEAN

The cacao bean or seed, obtained from the fruit of a tropical evergreen, is the source of cocoa and chocolate. The current supply of cacao or cocao beans is below world requirements. This has necessitated international allocation to assure that all countries obtain a fair share of the quantity available.

Cacao can be grown successfully only in a belt extending roughly from 20° north of the Equator to 20° south of it. It requires an evenly distributed annual rainfall of between 60 and 150 inches and an average atmospheric shade temperature of about 80° Fahrenheit. Rich, deep, well-drained soils appear to be best for optimum development of the tree.

About 68 percent of the world's cocoa originates in West Africa; 30 percent in South and Central America, including the Caribbean area; and 2 percent in Asia and Oceania. The Gold Coast is the largest producer, supplying about 40 percent of the total production. Brazil ranks second, and Nigeria third. Other important producers are the Ivory Coast, Dominican Republic, Venezuela, Ecuador, and the British West Indies. World production totaled about 1,724 million pounds in 1939 and 1,443 million in 1947.

Most producing countries are now taking steps to increase the output of cacao beans, but the process is necessarily slow, since it takes from 4 to 6 years for new plantings to reach bearing age, and the control of diseases presents problems of a long-range nature.

Consumption of chocolate and cocoa products is largely confined to North America and Europe. The United States is the world's largest consumer, importing about 40 percent of the raw cacao entering world trade. The United Kingdom ranks second as an importer of cacao and is followed by France and the Netherlands.

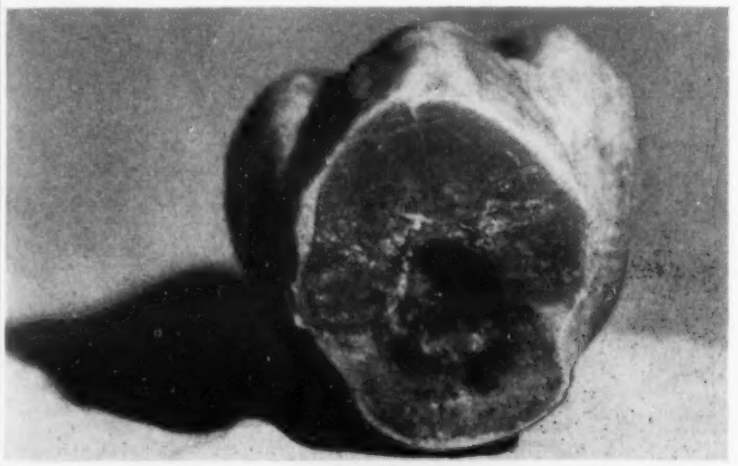
Gifts of Science

THE CHICKEN OF TOMORROW

by **H. L. SHRADER**

Poultrymen everywhere are faced with postwar adjustments in chicken numbers. In war-torn areas, particularly in Europe, the problem will eventually be restoration of prewar numbers. In the "big" grain producers, the problem is reversed. Already a downward trend from wartime expansion is apparent in the United States and Argentina. Whatever the adjustment to be made, this is an opportune time for attention to improvement of breeds.

In the United States a spirited search is going forward for that barnyard bird to be known as the "Chicken of Tomorrow." Successful development of this much-talked-about "meatier" fowl has had added impetus on this second or middle year of the 3-year breeding program. Poultry breeders, hatchery operators, and 4–H Poultry Club members are all trying to show that they can originate an improved meat-type chicken similar to the famed broad-breasted turkey.



Cross section showing well-fleshed breast of a New Hampshire hen. This strain is entered in the final 1948 Chicken-of-Tomorrow Contest.

The over-all objective of the program is to produce a chicken with shorter, meatier legs, broader breast, and larger proportion of flesh to bone. The bird must grow faster on less feed consumption, thus providing a better margin of profit for the grower; it must have a fairly high rate of egg production and good inherited hatchability in order to reproduce itself economically. All these specifications are in the blueprint for this ideal meat-type chicken. And the poultryman who grows the best chicken of this type will have something to crow about, because he will receive a large cash reward when the competition closes in June 1948. Additional runner-up prizes will also be awarded.

The component parts desired for the creation of a superior chicken already exist, as is well known. They are scattered through many breeds, strains, and varieties of chickens. What is needed is to bring as many as possible of these desired qualities together in one strain, variety, or type of chicken. These strains help to improve the chickens of the United States and of foreign countries.

Poultry scientists in colleges and experiment stations have been working along this line for several years. They have recognized the need for experiments by as many breeders as possible to hasten accomplishment of the desired goal. A National Committee was formed consisting of representatives of the United States Department of Agriculture, State Experiment Stations, a retail chain store, and all the leading National Poultry Associations. This group announced a 3-year breeding and exhibition program. The plan called for State contests the first year, State and regional contests the second year, and a final national contest the third year.

For the preliminary State and regional contests, each poultry raiser who enters must designate a lot of not over 300 chicks as his Chicken-of-Tomorrow Contest pen. These chicks are grown to a certain age, usually 12 or 14 weeks, and 15 live cockerels are selected and shipped to some central point. These birds are then killed, dressed, and judged, the best 12 being selected on the basis of type, finish, and quality.

In the national contest, to be held in 1948 at the Delaware Experiment Station, each breeder will ship 720 hatching eggs to a central hatchery, and 400 chicks from each lot will be grown for 12 weeks; then all the 16,000 chicks will be dressed, judged, and the prizes awarded.

A number of outstanding new breeds, such as the Eisenbar, will be entered. Many crossbred chickens and some old-established breeds will be included. The White Plymouth Rock and New Hampshire breeds have been prominent winners in the State contests. No one knows what breed, or combination of breeds, will receive the grand prize, but, with such stiff competition, the winner will be sure to be an improved meat-type bird, and consumers in this country and abroad can look forward to a better, meatier, and more delicious chicken.

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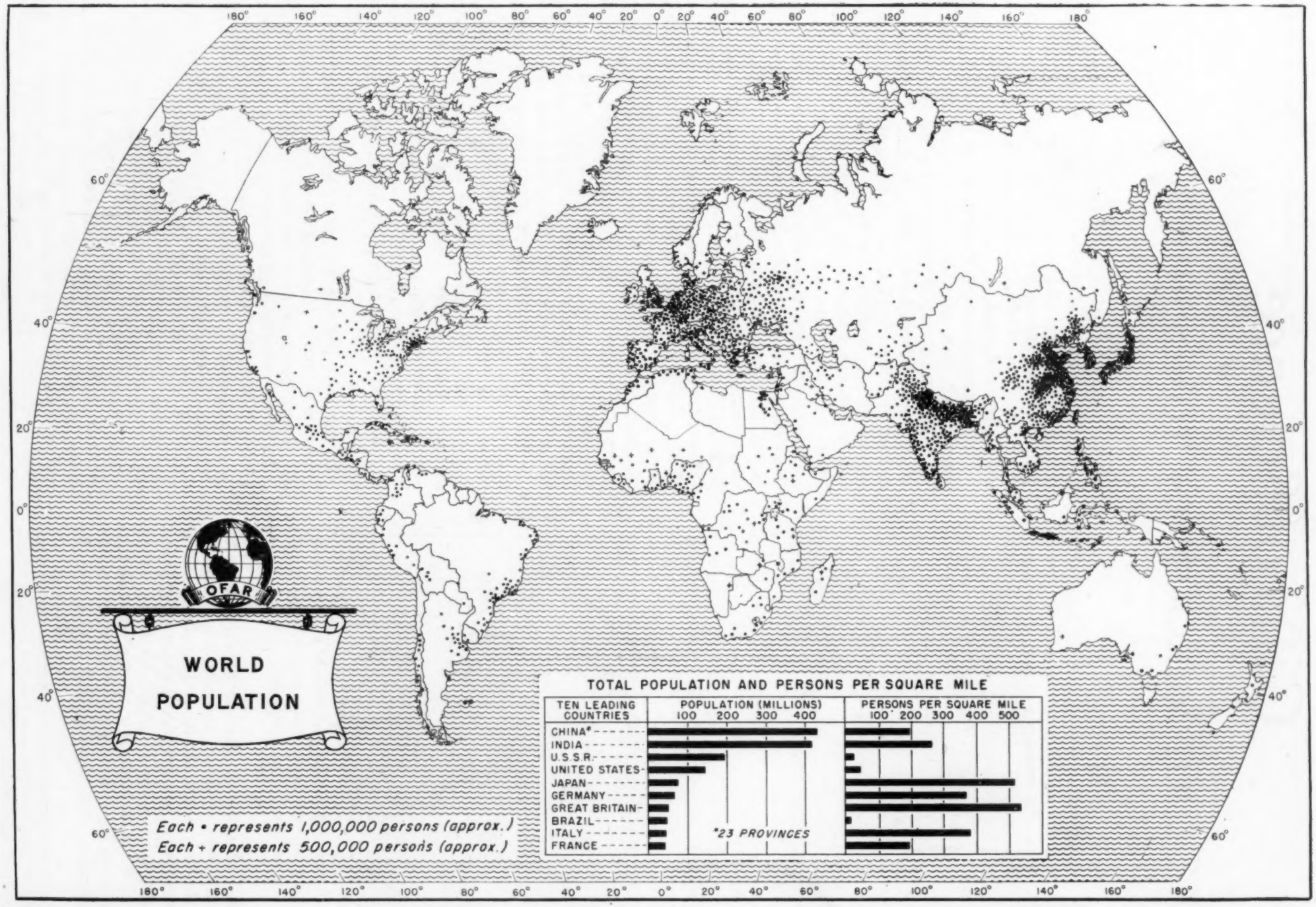

The above map, showing the population pattern of the world, is the first of a series of world maps that will occupy this space in each issue of *Foreign Agriculture*. Population was selected for the first map because of its major importance to agriculture. It is not only applicable to the articles in this issue but will be of value for reference in connection with future articles.